UNIVERSITY OF MYSORE.

Notification No. 26154, dated the 15th June 1929.

The following is the revised detailed syllabus in Geometry (Theory and Practical) for the Intermediate Examination in Arts and the Intermediate Examination in Science, as passed by the Senate and sanctioned by Government in their order No. D. 12801—Uni. 424-28-2, dated the 1st June 1929.

Intermediate Examination in Arts.

MATHEMATICS.

(*c*) GEOMETRY.

(*i*) *Theorems in plane Geometry* (*Detailed syllabus*).

1. Geometrical Theorems corresponding to the following identities:—

$$K\ (a+b+c\ldots.) = Ka\ Kb + Kc\ldots\ldots$$
$$(a \pm b)^2 = a^2 \pm 2ab + b^2$$
$$a^2 - b^2 = (a+b)\ (a-b)$$
$$(a+b)^2 - (a-b)^2 = 4ab$$
$$(a+b)^2 + (a-b)^2 = 2\ (a^2 + b^2)$$

2. The square on a side of a tringle is greater than, equal to, or less than, the sum of the squares on the other two sides, according as the angle contained by these two sides is obtuse, right, or acute. The difference in the case of inequality is twice the rectangle concontained by one of the two sides and the projection of it on the other.

3. If D is a point in the side BC of a triangle such that $BD = \frac{1}{n} BC$,

then $(n-1)\ AB^2 + AC^2 - n.\ AD^2 + (1 - \frac{1}{n})\ BC^2$.

4. If two chords of a circle cut one another, the rectangle contained by the segments of the one is equal to the rectangle contained by the segments of the other; and conversely if two straight lines cut one another so that the rectangle contained by the segments of the one is equal to the rectangle contained by the segments of the other, the four extremities of the straight lines are concyclic.

5. If from a point without a circle a secant and a tangent are drawn to the circle, the rectangle contained by the whole secant and its segment external to the circle is equal to the square on the tangent.

6. If from any point without a circle two straight lines are drawn one of which cuts the circle and the other meets it, and if the rectangle contained by the whole secant and its part external to the circle equals the square on the line which meets the circle, this line is a tangent to the circle.

7. Definition and elementary theorems connecting antecedents and consequents.

8. A given straight line can be divided internally or externally in a given ratio at one and only one point.

9. A straight line drawn parallel to one side of a triangle cuts the other two sides produced (if necessary) proportionally; and the converse.

10. If the vertical angle of a triangle is bisected internally or externally, the bisector divides the base internally or externally into segments which have the same ratio as the other sides of the triangle; and the converse.

11. In equal circles, angles, whether at the centres or at the circumferences, have the same ratio as the arcs on which they stand.

12. Triangles and parallelograms having equal altitudes are as their bases.

13. If two triangles are equiangular, their corresponding sides are proportionals and the converse.

14. If two triangles have one angle of the one equal to one angle of the other and the sides about the equal angles proportional, the triangles are similar.

15. Two triangles are similar, if the sides of the one are respectively parallel or perpendicular to the sides of the other.

16. If two triangles have two sides of the one proportional to two sides of the other and an angle in each opposite one corresponding pair of these sides equal, the angles opposite the other pair are either equal or supplementary.

17. If from the right angle A of a right-angled triangle A B C, A D is drawn perpendicular to B C, then (i) A D is the mean proportional between B D and D C.; (ii) B A is the mean proportional between B D and B C; (iii) C A is the mean proportional between C D and C B.

18. If two triangles are similar, their corresponding lines (such as medians, altitudes, inradii, circumradii, etc.) are proportional.

19. If two triangles have one angle of the one equal to one angle of the other, their areas are proportional to the rectangles contained by the sides about these equal angles. Similarly for parallelograms having one angle of the one equal to one angle of the other.

20. Similar triangles are to one another as the squares on their corresponding sides.

21. Two similar polygons can be divided into the same number of similar triangles similarly placed ; and the converse.

22. The perimeters of two similar polygons are to each other as their corresponding sides and their areas are proportional to the squares on corresponding sides.

23. In a right-angled triangle, any rectilineal figure described on the hypotenuse is equal to the sum of the similar and similarly described figures on the other two sides.

24. If four straight lines are proportional and a pair of similar rectilineal figures are similarly described on the first and the second and also a pair of similar rectilineal figures are similarly described on the third and the fourth, the figures are proportional.

25. If the vertical angle of a triangle is bisected internally by a straight line which cuts the base, the rectangle contained by the sides of the triangle equals the rectangle contained by the segments of the base together with the square on the straight line which bisects the angle.

26. If from the vertical angle of a triangle a straight line is drawn perpendicular to the base, the rectangle contained by the sides of the triangle equals the rectangle contained by the perpendicular and the diameter of the circumcircle.

27. The rectangle contained by the diagonals of a cyclic quadrilateral is equal to the sum of the two rectangles contained by its opposite sides.

28. The perpendiculars from the vertices of a triangle on the opposite sides meet in a point called the orthocentre and the distance of each vertex from the orthocentre is twice the perpendicular distance of the circumcentre from the side opposite the vertex.

29. The three medians of a triangle meet in a point and this point is a point of trisection of each median and also of the line joining the circumcentre to the orthocentre.

30. The circle through the middle point of the sides of a triangle passes also through the feet of the perpendiculars of the triangle and through the middle points of the three straight lines joining the orthocentre to the vertices of the triangle.

31. If a perpendicular drawn from the vertex of a triangle is produced to meet the circumcircle, the distance of this point of intersection from the base is equal to the distance of the orthocentre of the triangle from the base.

32. The feet of the perpendiculars drawn on the sides of a triangle from any point on the circumcircle of the triangle are collinear.

(*ii*) *Solid Geometry.*

1. Any two straight lines which intersect each other, or are parallel, lie in a plane.

2. If a straight line is perpendicular to each of two intersecting straight lines at their point of intersection, it is perpendicular to the plane containing them.

3. If a straight line is perpendicular to each of three concurrent straight lines at their point of intersection, the three straight lines are in one plane.

4. Two straight lines perpendicular to the same plane are parallel ; and the converse.

5. If two parallel planes are cut by a third plane, the lines of intersection are parallel.

6. If two straight lines are cut by parallel planes, they are cut proportionally.

7. If two intersecting planes are both perpendicular to a third plane, the common section of the first two is perpendicular to the third plane.

8. A straight line can be drawn perpendicular to each of two straight lines in space which do not intersect and are not parallel, and this straight line is the shortest distance between them.

9. If a solid angle is contained by three plane angles, any two them are together greater than the third.

10. The plane angles which contain a solid angle are together less than four right angles.

(*iii*) *Practical Geometry.*

Construction of the circumscribed, inscribed and escribed circles of a triangle. Medial section. Construction of regular polygons. Division of finite straight lines in a given ratio and construction of similar figures.

Construction of triangles from given data and division of triangles, quadrilaterals and polygons in a given ratio. Areas of polygons and problems relating thereto. Simple calculations relating to regular solids.

(*iv*) *Analytical Geometry.*

The point and the straight line.

INTERMEDIATE EXAMINATION IN SCIENCE.

MATHEMATICS (Compulsory.)

(*c*) Geometry, and (*d*) Practical Work.

Pure Geometry (Plane)—Propositions Nos. 1-24 as for the Intermediate Examination in Arts.

Solid Geometry.—As for the Intermediate Examination in Arts.

Practical Geometry.—As for the Intermediate Examination in Arts.

ADDITIONAL MATHEMATICS.

(*c*) Geometry.

Pure Geometry (Plane).—Propositions 25-32 as in the Syllabus for the Intermediate Examination in Arts.

Analytical Geometry—The point, the straight line, the circle and the parabola.

Notification No. 957, *dated the 5th July* 1929.

Ordinance 55 (page 24 of the Calendar for 1928-29, Vol. I) has been amended as under :—

(i) In sub-clause 1 of the first para, on page 24, delete the words 'and been declared eligible by the University for admission to College Courses of study' occurring in lines 3 to 5 and substitute the following :—

"and obtained the differential minima as hereinafter prescribed."

(ii) Delete the full-stop and add the following at the end of sub-clause 2 of the first para on page 24 :—

"and satisfies the University Council as to his fitness for admission to the course chosen."

(iii) In the second para on page 24, for the words "The differential minima for admission to College Courses of study shall be as follows", substitute the following :—

The following shall be the differential minima for admission of Mysore S. S. L. C. students to the College Courses of study.

(iv) In clause (iii) of para 2 on page 24, insert the words 'each of the' between 'in' and 'other' in line 1.

The first and second paras of the ordinance with these modifications will read as under :—

Admission.

"55. No one will be admitted to the Junior Intermediate class unless he has

(1) passed the Mysore S. S. L. C. Examination and obtained the differential minima as hereinafter prescribed

Or

(2) passed the Matriculation Examination of an Indian University or any other Examination recognised by the University as equivalent thereto and satisfies the University Council as to his fitness for admission to the course chosen.

The following shall be the differential minima for admission of Mysore S. S. L. C. students to the College courses of study :—

Intermediate in Arts and Science.

(i) 40 per cent in English.

(ii) 30 per cent in the additional subject (*i.e.*, Additional Mathematics, Additional Language or a Vocational subject).

(iii) 35 per cent in each of the other subjects, subject to the following exceptions and qualifications:—

(*a*) For students taking Mathematics with or without Physics in Intermediate in Arts, or in Intermediate in Science (General) and Intermediate in Science preparatory to Engineering Degree or Diploma course either 35 per cent in Additional Mathematics, or 40 per cent in Elementary Mathematics.

(*b*) For those students who take up the Intermediate in Arts course with a Selected Language either 35 per cent in a corresponding language taken as an additional subject, or 40 per cent in a corresponding language taken as Second Language.

(*c*) For students taking any Science subject in Intermediate in Arts, or Intermediate in Science (General) 40 per cent in Elementary Science.

(*d*) For students taking up I.Sc. course preparatory to Diplomas in Agriculture, Engineering and Technology, Textiles and Applied Chemistry, an aggregate of not less than 35 per cent in English and Elementary Science in case the candidate obtains less than 40 per cent and not less than 30 per cent in English."

(*Government Order No. D.* 13593—Uni. 122-28-8, *dated the* 25*th June* 1929.)

B. M. SRIKANTIA,
Registrar.